AMENDMENTS TO THE CLAIMS

Please find below a listing of claims that will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A router supporting multiple routing protocols, said router comprising:
   a. an interface layer including a plurality of I/O controllers, each I/O controller implementing an I/O port;
   b. a switching layer in communication with said interface layer for selectively establishing signal pathways between said I/O ports; and
   c. a routing layer in communication with said interface layer, said routing layer including a plurality of routing protocol computing entities, each routing protocol computing entity being associated with a ~~respective~~ set of at least one routing protocol and including:
      i. a ~~respective~~ CPU; and
      ii. a ~~respective~~ data storage medium in communication with said CPU and storing program data for execution by said CPU to cause said routing protocol computing entity to effect management of one or more peering sessions with remote routing devices according to the at least one routing protocol in the set associated with said routing protocol computing entity, said management of one or more peering sessions comprising maintaining in said data storage medium one or more route databases including routing data;

   wherein the set of at least one routing protocol associated with a first one of said routing protocol computing entities is different from the set of at least one routing protocol associated with a second one of said routing protocol computing entities;

said router being operative for:

- merging the routing data included in the one or more route databases maintained in the data storage medium of each of said routing protocol computing entities to produce merged routing data; and
- transferring at least a portion of the merged routing data to the data storage medium of each of at least one of said routing protocol computing entities.

2. (original) A router as defined in claim 1, wherein each routing protocol computing entity is operative to maintain simultaneously a plurality of peering sessions with remote routing devices.

3. (previously presented) A router as defined in claim 1, wherein each routing protocol computing entity is operative to exchange data with a remote routing device through said interface layer during a peering session.

4. (previously presented) A router as defined in claim 3, wherein the peering session includes a transfer of route information data from said router to the remote routing device.

5. (previously presented) A router as defined in claim 4, wherein the peering session includes a transfer of route information data from the remote routing device to said router.

6. (currently amended) A router as defined in claim 5, wherein the one or more route databases maintained in the data storage medium of each of at least one of said ~~plurality of~~ routing protocol computing entities ~~stores~~ are held in a local routing table ~~holding~~ stored in said data storage medium and include at least one inbound route database derived at least in part from route information data transferred from a remote routing device to said router.

7. (currently amended) A router as defined in claim 6, wherein each of said at least one of said ~~plurality of~~ routing protocol computing entities is operative to apply an

inbound policy processing on the route information data transferred from a remote routing device during generation of said at least one inbound route database.

8. (previously presented) A router as defined in claim 5, wherein the data storage medium of at least one of said plurality of routing protocol computing entities stores a local routing table that holds a best route database, said at least one routing protocol computing entity being operative to apply an outbound policy processing on its best route database to generate at least one outbound route database, said at least one routing protocol computing entity being operative to transfer route information data from its said at least one outbound route database to a remote routing device.

9. (currently amended) A router as defined in claim 1, wherein the one or more route databases maintained in the data storage medium of each routing protocol computing entity ~~stores a respective~~ are held in a local routing table ~~holding~~ stored in said data storage medium and include at least one ~~respective~~ inbound route database derived from route information data transferred from a remote routing device to said router.

10. (previously presented) A router as defined in claim 9, wherein each routing protocol computing entity is operative to apply an inbound policy processing on the route information data transferred from a remote routing device during generation of said at least one inbound route database.

11. (currently amended) A router as defined in claim 10, wherein the local routing table of each routing protocol computing entity holds a ~~respective~~ best route database, each routing protocol computing entity being operative to apply an outbound policy processing on the best route database of said local routing table of said routing protocol computing entity to generate at least one ~~respective~~ outbound route database, each routing protocol computing entity being operative to transfer route information data from said at least one outbound route database of said routing protocol computing entity to a remote routing device.

12. (currently amended) A router as defined in claim 11, wherein said routing layer includes a control computing entity in data communicative relationship with each routing protocol computing entity, said control computing entity including:

a. a ~~respective~~ CPU; and

b. a ~~respective~~ data storage medium in communication with said CPU of said control computing entity and storing program data for execution by said CPU of said control computing entity and a master routing table.

13. (original) A router as defined in claim 12, wherein the program data stored in the data storage medium of said control computing entity implements a routing table manager for managing said master routing table.

14. (previously presented) A router as defined in claim 13, wherein each routing protocol computing entity is in communication with said control computing entity to transfer to the data storage medium of said control computing entity data from the at least one inbound route database in said routing protocol computing entity.

15. (currently amended) A router as defined in claim 14, wherein said routing table manager is operative to apply a master policy processing on data received from the ~~respective~~ at least one inbound route database in each routing protocol computing entity to generate the master routing table.

16. (currently amended) A router as defined in claim 15, wherein said master policy processing ~~includes~~ effects said merging by merging the data in the inbound route databases ~~from at least two~~ of said routing protocol computing entities to produce the merged ~~inbound~~ routing data.

17. (currently amended) A router as defined in claim 16, wherein the merged ~~inbound~~ routing data includes information mapping destinations and routes to the destinations.

18. (currently amended) A router as defined in claim 17, wherein the merged ~~inbound~~ routing data includes a plurality of destinations and a set of routes associated with each destination of the plurality of destinations, said master policy processing includes discarding from each set of routes a plurality of routes and retaining only a subset of the set of routes.

19. (currently amended) A router as defined in claim 18, wherein said control computing entity is operative to transfer to the data storage medium of a first one of said routing protocol computing entities at least a portion of the ~~master~~ merged routing data to form the best route database in the data storage medium of said first one of said routing protocol computing entities.

20. (currently amended) A router as defined in claim 19, wherein said control computing entity is operative to transfer to the data storage medium of a second one of said routing protocol computing entities at least a portion of the ~~master~~ merged routing data to form the best route database in the data storage medium of said second one of said routing protocol computing entities.

21. (previously presented) A router as defined in claim 12, wherein each I/O controller includes a forwarding processor, when a data packet is received at the I/O controller, said forwarding processor determining an I/O port of said interface layer through which the data packet is to be released, said forwarding processor including a data storage medium holding a forwarding table, said forwarding table including data derived from said master routing table.

22. (previously presented) A router as defined in claim 1, wherein the set of at least one routing protocol associated with a first one of said routing protocol computing entities contains BGP, and wherein the set of at least one routing protocol associated with a second one of said routing protocol computing entities contains OSPF.

23. (currently amended) A router, comprising:

a. an interface layer including a plurality of I/O controllers, each I/O controller implementing an I/O port;

b. a switching layer in communication with said interface layer for selectively establishing signal pathways between said I/O ports; and

c. a routing layer in communication with said interface layer, said routing layer including a plurality of routing protocol computing entities, each routing protocol computing entity being associated with a ~~respective~~ routing protocol and including:

i. a ~~respective~~ CPU; and

ii. a ~~respective~~ data storage medium in communication with said CPU and storing program data for execution by said CPU to cause said routing protocol computing entity to effect management of one or more peering sessions with remote routing devices according to the routing protocol associated with said routing protocol computing entity, said management of one or more peering sessions comprising maintaining in said data storage medium one or more route databases;

wherein the routing protocol associated with a first one of said routing protocol computing entities is the same as the routing protocol associated with a second one of said routing protocol computing entities;

wherein the one or more route databases maintained in the data storage medium of [[a]] said first one of said routing protocol computing entities contain information on at least one route for which there is no information in the one or more route databases maintained in the data storage medium of [[a]] said second one of said routing protocol computing entities.

24. (previously presented) A router as defined in claim 23, wherein the routing protocol associated with said first one of said routing protocol computing entities and the routing protocol associated with said second one of said routing protocol computing entities are distance vector protocols.

25. (previously presented) A router as defined in claim 23, wherein the routing protocol associated with said first one of said routing protocol computing entities and the routing protocol associated with said second one of said routing protocol computing entities are link state protocols.

26. (previously presented) A router as defined in claim 24, wherein the first one of said routing protocol computing entities is capable of establishing peering sessions with a first set of remote routing devices, the second one of said routing protocol computing entities is capable of establishing peering sessions with a second set of remote routing devices, the first set of remote routing devices excluding at least one routing device that belongs to the second set of routing devices.

27. (original) A router as defined in claim 26, wherein the first set of remote routing devices excludes any remote routing device from the second set.

28. (original) A router as defined in claim 27, wherein the first and the second sets of remote routing devices are mutually exclusive sets.

29. (previously presented) A router as defined in claim 25, wherein the first one of said routing protocol computing entities is capable of establishing peering sessions with remote routing devices from a first area, the second one of said routing protocol computing entities is capable of establishing peering sessions with remote routing devices from a second area, the first area being different from the second area.

30. (currently amended) A router as defined in claim [[56]] 23, wherein the routing protocol associated with each of said first one of said routing protocol computing entities and said second one of said routing protocol computing entities is BGP.

31. – 34. (previously cancelled)

35. (currently amended) A router, comprising:

a. an interface layer including a plurality of I/O controllers, each I/O controller implementing an I/O port;

b. a switching layer in communication with said interface layer for selectively establishing signal pathways between said I/O ports;

c. a routing layer in communication with said interface layer, said routing layer comprising a routing protocol computing entity ~~being~~ capable of managing at least one peering session with a remote routing device, the peering session including the exchange of messages with the remote routing device through one of the I/O controllers, the peering session being comprised of a plurality of tasks;

d. the one I/O controller implementing a peering session assist module,

e. said peering session assist module being capable of performing some of the tasks of the peering session autonomously from said routing protocol computing entity of said routing layer;

f. said routing layer being capable of performing tasks of the peering session other than the tasks performed by the peering session assist module;

wherein the tasks performed by the peering session assist module autonomously from said routing protocol computing entity include authenticating, without intervention of said routing protocol computing entity, messages received from the remote routing device.

36. – 37. (previously cancelled)

38. (previously presented) A router, comprising:

a. an interface layer including a plurality of I/O controllers, each I/O controller implementing an I/O port;

b. a switching layer in communication with said interface layer for selectively establishing signal pathways between said I/O ports;

c. a routing layer in communication with said interface layer;

d. each I/O controller implementing an LSA entity, said LSA entity including an LS database, said LSA entity being responsive to an LSA message from a remote routing device including LS information to:

i. update said LS database; and

ii. forward the LS information to said routing layer.

39. (original) A router as defined in claim 38 wherein said LSA entity is operative to verify, upon reception of the LSA message, whether the LS information is already present in said LS database and in the affirmative to discard the LSA message.

40. (original) A router as defined in claim 39, wherein said LSA entity is responsive to reception of LS information received from another I/O controller of said interface layer to forward an LSA message including the LS information to a remote routing device.

41. (previously presented) A router as defined in claim 38, wherein said routing layer includes:

a. a control computing entity in data communicative relationship with each I/O controller, said control computing entity including:

i. a CPU;

ii. a data storage medium in communication with said CPU;

iii. a master routing table stored in said data storage medium, said master routing table holding a master routing database derived at least in part from the LS database of at least one of said I/O controllers;

iv. program data in said data storage medium to implement a main routing table manager to manage said master routing table;

b. a backup computing entity in data communicative relationship with at least one of said I/O controllers, said backup computing entity including:

i. a CPU;

ii. a data storage medium in communication with the CPU of said backup computing entity;

iii. program data in the data storage medium of said backup computing entity for execution by the CPU of said backup computing entity to implement a main routing table manager;

said backup computing entity being responsive to an operational failure of said control computing entity to:

1. transfer information from at least one of said I/O controllers to re-build the LS database;
2. enable the program data in the data storage medium of said backup computing entity to act as a main routing table manager.

42. – 49. (previously cancelled)

50. (currently amended) A router as defined in claim 1, wherein the ~~respective~~ set of at least one routing protocol associated with each of said routing protocol computing entities contains exactly one routing protocol.

51. (previously presented) A router as defined in claim 1, wherein the set of at least one routing protocol associated with said first one of said routing protocol computing entities and the set of at least one routing protocol associated with said second one of said routing protocol computing entities are mutually exclusive sets.

52. (currently amended) A router as defined in claim 1, wherein the data storage medium of each routing protocol computing entity holds a ~~respective~~ local routing table storing ~~a respective~~ an inbound routing database derived from route information data transferred from a remote routing device during a peering session managed by said routing protocol computing entity, wherein said routing layer includes:

- a control computing entity in data communicative relationship with each routing protocol computing entity, said control computing entity including:
  i. a ~~respective~~ CPU; and
  ii. a ~~respective~~ data storage medium in communication with the CPU of said control computing entity and storing:

- a master routing table holding a master routing database derived at least in part from the ~~respective~~ inbound routing database of each routing protocol computing entity; and
- program data for execution by the CPU of said control computing entity to implement a routing table manager to manage said master routing table;

- a backup computing entity in data communicative relationship with each routing protocol computing entity and with said control computing entity, said backup computing entity including:
  i. a ~~respective~~ CPU; and
  ii. a ~~respective~~ data storage medium in communication with the CPU of said backup computing entity and storing program data for execution by the CPU of said backup computing entity to cause said backup computing entity to be responsive to an operational failure of said control computing entity to:
    1. download the ~~respective~~ inbound routing database of each routing protocol computing entity; and
    2. rebuild the master routing database at least in part from the ~~respective~~ inbound routing database downloaded from each routing protocol computing entity.

53. (currently amended) A router as defined in claim 1, wherein the data storage medium of each routing protocol computing entity holds a ~~respective~~ local routing table storing ~~a respective~~ an inbound routing database derived from route information data transferred from a remote routing device during a peering session managed by said routing protocol computing entity, wherein said routing layer includes:

- a control computing entity in data communicative relationship with each routing protocol computing entity, said control computing entity including:
  i. a ~~respective~~ CPU; and
  ii. a ~~respective~~ data storage medium in communication with the CPU of said control computing entity and storing:

- a master routing table holding a master routing database derived at least in part from the ~~respective~~ inbound routing database of each routing protocol computing entity; and
- program data for execution by the CPU of said control computing entity to implement a routing table manager to manage said master routing table;

- a backup computing entity in data communicative relationship with each routing protocol computing entity and with said control computing entity, said backup computing entity including:
  i. a ~~respective~~ CPU; and
  ii. a ~~respective~~ data storage medium in communication with the CPU of said backup computing entity and storing program data for execution by the CPU of said backup computing entity to cause said backup computing entity to be responsive to an operational failure of a particular one of said routing protocol computing entities to:
    1. transfer information from said master routing table to the data storage medium of said backup computing entity to rebuild at least partially the local routing table of said particular one of said routing protocol computing entities; and
    2. cause said backup computing entity to effect management of one or more peering sessions with remote routing devices according to the at least one routing protocol in the set associated with said particular one of said routing protocol computing entities.

54. (currently amended) A router as defined in claim 23, wherein said routing layer includes:

- a control computing entity in data communicative relationship with each routing protocol computing entity, said control computing entity including:
  i. a ~~respective~~ CPU; and

ii. a ~~respective~~ data storage medium in communication with the CPU of said control computing entity and storing:

- a master routing table holding a master routing database derived at least in part from the ~~respective~~ one or more route databases of each routing protocol computing entity; and
- program data for execution by the CPU of said control computing entity to implement a routing table manager to manage said master routing table;

- a backup computing entity in data communicative relationship with each routing protocol computing entity and with said control computing entity, said backup computing entity including:

i. a ~~respective~~ CPU; and

ii. a ~~respective~~ data storage medium in communication with the CPU of said backup computing entity and storing program data for execution by the CPU of said backup computing entity to cause said backup computing entity to be responsive to an operational failure of said control computing entity to:

1. download the ~~respective~~ one or more route databases of each routing protocol computing entity; and
2. rebuild the master routing database at least in part from the ~~respective~~ one or more route databases downloaded from each routing protocol computing entity.

55. (currently amended) A router as defined in claim 23, wherein said routing layer includes:

- a control computing entity in data communicative relationship with each routing protocol computing entity, said control computing entity including:

i. a ~~respective~~ CPU; and

ii. a ~~respective~~ data storage medium in communication with the CPU of said control computing entity and storing:

- a master routing table holding a master routing database derived at least in part from the ~~respective~~ one or more route databases of each routing protocol computing entity; and
- program data for execution by the CPU of said control computing entity to implement a routing table manager to manage said master routing table;

- a backup computing entity in data communicative relationship with each routing protocol computing entity and with said control computing entity, said backup computing entity including:
  i. a ~~respective~~ CPU; and
  ii. a ~~respective~~ data storage medium in communication with the CPU of said backup computing entity and storing program data for execution by the CPU of said backup computing entity to cause said backup computing entity to be responsive to an operational failure of a particular one of said routing protocol computing entities to:
    1. transfer information from said master routing table to the data storage medium of said backup computing entity to rebuild at least partially the ~~respective~~ one or more route databases of said particular one of said routing protocol computing entities; and
    2. cause said backup computing entity to effect management of one or more peering sessions with remote routing devices according to the routing protocol associated with said particular one of said routing protocol computing entities.

56. – 58. (cancelled)

59. (new) A router as defined in claim 1, wherein said transferring comprises transferring the at least a portion of the merged routing data to the data storage medium of each of said routing protocol computing entities.

60. (new) A router as defined in claim 1, wherein the merged routing data includes data regarding destinations and routes for the destinations, including, for each of at least one of the destinations, a plurality of routes for that destination.

61. (new) A router as defined in claim 60, wherein said router is operative for, prior to said transferring, pruning the merged routing data by retaining, for each destination, at most a set number of routes for that destination.

62. (new) A router as defined in claim 61, wherein said pruning comprises pruning the merged routing data based on a preference attribute associated with each of the routes.

63. (new) A router as defined in claim 1, wherein said routing layer includes a control computing entity in data communicative relationship with each of said routing protocol computing entities, said control computing entity including:

- a CPU; and
- a data storage medium in communication with said CPU of said control computing entity and storing program data for execution by said CPU of said control computing entity to cause said control computing entity to effect said merging and said transferring.

64. (new) A router as defined in claim 1, wherein said transferring comprises storing the at least a portion of the merged routing data in a best route database maintained in the data storage medium of each of said at least one of said routing protocol computing entities.

65. (new) A router supporting multiple routing protocols, said router comprising:

a. an interface layer including a plurality of I/O controllers, each I/O controller implementing an I/O port;

b. a switching layer in communication with said interface layer for selectively establishing signal pathways between said I/O ports; and

c. a routing layer in communication with said interface layer, said routing layer including a plurality of routing protocol computing entities, each routing protocol computing entity being associated with a set of at least one routing protocol and including:

i. a CPU; and

ii. a data storage medium in communication with said CPU and storing program data for execution by said CPU to cause said routing protocol computing entity to effect management of one or more peering sessions with remote routing devices according to the at least one routing protocol in the set associated with said routing protocol computing entity, said management of one or more peering sessions comprising maintaining in said data storage medium one or more route databases including routing data;

wherein the set of at least one routing protocol associated with a first one of said routing protocol computing entities is different from the set of at least one routing protocol associated with a second one of said routing protocol computing entities;

said router being operative for:

- merging the routing data included in the one or more route databases maintained in the data storage medium of each of said routing protocol computing entities to produce merged routing data that includes data regarding destinations and routes for the destinations, including, for each of at least one of the destinations, a plurality of routes for that destination; and
- pruning the merged routing data by retaining, for each destination, at most a set number of routes for that destination.

66. (new) A router as defined in claim 65, wherein said pruning comprises pruning the merged routing data based on a preference attribute associated with each of the routes.

67. (new) A router as defined in claim 65, wherein said routing layer includes a control computing entity in data communicative relationship with each of said routing protocol computing entities, said control computing entity including:

- a CPU; and
- a data storage medium in communication with said CPU of said control computing entity and storing program data for execution by said CPU of said control computing entity to cause said control computing entity to effect said merging and said pruning.